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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/937,715	01/16/2002	Philip S Russell	124-892	7024

7590

06/13/2003

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EXAMINER

SONG, SARAH U

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 06/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/937,715

Applicant(s)

RUSSELL ET AL.

Examiner

Sarah Song

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/16/02.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20, 22-27 and 30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20 and 22-27 is/are allowed.
- 6) ☒ Claim(s) 1-19 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The prior art documents submitted by the applicant in the Information Disclosure Statement filed on October 1, 2001 have all been considered and made of record (note the attached copy of form PTO-1449).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 30 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 30 recites a method of transmitting, but does not recite any method steps. Therefore, claim 30 does not particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

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6. Claims 1-7, 9-12, 14, 15, 17-19 and 30 are rejected under 35 U.S.C. 102(a) as being anticipated by DiGiovanni et al. (U.S. Patent 5,802,236 provided by the Applicant). DiGiovanni et al. discloses a photonic crystal fiber comprising a region of substantially uniform, lower refractive index (51) which is substantially surrounded by cladding with includes regions of higher refractive index and which is substantially periodic, characterized in that the region of lower refractive index has a longest transverse dimension which is longer than a single shortest, period of the cladding (See Figure 5 and column 5, lines 46-52). It has been held that the functional "whereby" statement does not define any structure and accordingly cannot serve to distinguish. In re Mason, 114 USPQ 127, 44 CCPA 937 (1957). Regarding claims 2 and 7, the core region may comprise air. Regarding claims 3-5, Figure 5 shows a triangular lattice comprising air holes (voids) in a solid matrix (silica). Regarding claim 6, DiGiovanni et al. discloses the fraction of air in the cladding to be 50% by volume (column 10, lines 48-52). Regarding claim 9, see column 9, lines 35-48. Regarding claims 10-11, see column 4, lines 26-31. Regarding claim 12, 14 and 15, see column 9, lines 15-34. Regarding claims 17-19, see Figure 3. Regarding claim 30, DiGiovanni et al. discloses a method of transmitting light along the disclosed fiber in Figure 3.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiGiovanni et al. DiGiovanni et al. does not specifically disclose spectral filters or gas sensors comprising photonic crystal fiber. However, a gas sensor is a suggested application, as discussed in column 1, lines 42-52. It would also have been obvious to one having ordinary skill in the art to use the fiber of DiGiovanni et al. in a spectral filter since the higher intensity of the optical signal guided by the fiber of DiGiovanni et al. would automatically compensate for any intrinsic attenuation resulting from the filter.

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over DiGiovanni et al. as applied to claims 1, respectively above, and further in view of Birks et al. (WO 99/00685). DiGiovanni et al. does not specifically disclose a lower refractive index portion to be a low-pressure region. Birks et al. discloses lower refractive index regions to be filled with air or a vacuum (low pressure region). One of ordinary skill in the art would have found it obvious to comprise the lower refractive index regions of a low-pressure region, or any various well-known lower refractive index materials depending on the particular type of radiation to be transmitted. For example, it would have been obvious for one having ordinary skill in the art to select a known preferred medium to transmit a particular optical signal or a particular wavelength.

Allowable Subject Matter

10. Claims 20 and 22-27 are allowed.

11. The following is a statement of reasons for the indication of allowable subject matter:
The prior art of record does not disclose or suggest the method of making a photonic crystal fiber comprising the step of forming a stack of canes, the stack including at least one truncated cane

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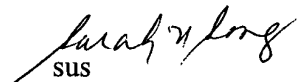
which defines a cavity in the stack, as claimed in claim 20. Claims 22-27 would be allowable as depending from claim 20.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Borrelli et al. discloses a hollow photonic crystal fiber (Figure 7).

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Any inquiry concerning the merits of this communication should be directed to Examiner Sarah Song at telephone number 703-306-5799. Any inquiry of a general or clerical nature, or relating to the status of this application or proceeding should be directed to the receptionist at telephone number 703-308-0956 or to the technical support staff supervisor at telephone number 703-308-3072.



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June 11, 2003